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ABSTRACT

Multiple-stage screening is discussed in the context of the prevention literature. Earlier multiple-stage screening studies are presented to illustrate different goals and methods employed. A multiple-stage screening procedure is described for the identification of depression among high school students. Students in grades 9-12 (N=862) completed a three-stage screening procedure. During the first and second stages, students completed a paper-and-pencil self-report measure (Mood and Anxiety Symptom Questionnaire); the third stage involved a computer-administered clinical interview with the student. Logistical issues regarding implementing a multiple-stage screening procedure in schools are presented. The implications of cut-off scores, the comorbodity of anxiety and depression, and other issues regarding the implementation of multiple-stage screening are discussed. The presentation provides a potentially cost efficient, relatively easily implemented technique developed to identify depressed adolescents that can be applied to other emotional and behavioral concerns. (Contains 18 references.) (Author/JDM)

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Multiple-Stage Screening for the Identification of Depression Among Adolescents

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Paper presented at the 34th Annual Convention of the

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Abstract

Multiple-stage screening is discussed in the context of the prevention literature. Earlier multiple-stage screening studies are presented to illustrate different goals and methods employed. A multiple-stage screening procedure is described for the identification of depression among high school students. Students in Grades 9 - 12 (N = 862) completed a three-stage screening procedure. During the first and second stages, students completed a paper-and-pencil self-report measure (Mood and Anxiety Symptom Questionnaire); the third stage involved a computer-administered clinical interview with the student. Logistical issues regarding implementing a multiple-stage screening procedure in schools are presented. The implications of cut-off scores, the comorbidity of anxiety and depression, and other issues regarding the implementation of multiple-stage screening are discussed. The presentation provides a potentially cost efficient, relatively easily implemented technique developed to identify depressed adolescents that can be applied to other emotional and behavioral concerns.

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Introduction

There is a long history of interest in the prevention of physical and mental health problems in the United States (Spaulding & Balch, 1983). Prevention activities in schools are particularly salient, given the emphasis on prevention in current national health reform proposals. Historically, school psychologists have been interested in prevention, but less directly involved (Zins & Forman, 1988), despite the fact that state boards of education often identify prevention as an activity that falls within the realm of school psychological services (e.g., Illinois Administrative Code, 2000).

Caplan (1964) proposed one of the more widely accepted conceptualizations of prevention. According to Caplan, there are three levels of prevention: primary, secondary, and tertiary. Primary prevention emphasizes reducing the incidence of a disorder occurring within a given population. Secondary prevention is concerned with the early identification and treatment of individuals experiencing problems. Tertiary prevention focuses on rehabilitation and prevention of further deterioration for those with serious problems. School psychologists often are involved at all three of these levels, spending considerable time in secondary and tertiary prevention activities. The focus of this presentation is on a secondary prevention activity, a large-scale screening for depression among adolescents.

Multiple-stage screening has been used to identify students at-risk for behavior disorders and antisocial behaviors. For example, Walker and colleagues (1988) developed a procedure, the Systematic Screening for Behavior Disorders (SSBD), that relies on teacher input at Stages 1 (ranking top three internalizers and externalizers) and 2 (ratings on critical events index and combined frequency index). Stage 3 consists of direct observations in the classroom and on the playground of students passing through Stage 2.

Charlebois et al. (1994) used a different approach in their multiple-stage screening for antisocial behaviors. At Stage 1, kindergarten teachers completed the Preschool Behavior Questionnaire for each boy at the end of the school year. A subset of boys who scored above the 70th percentile on the aggressiveness-hyperactivity-distractibility scale was randomly selected for Stage 2; mothers also completed the Child Behavior Checklist as part of Stage 1. Stage 2, which occurred 8 months later, consisted of classroom observations and observations of family interactions at home and in a laboratory setting. Stage 3 occurred five years after the Stage 1 assessments. During Stage 3, students who participated in Stage 2 completed the Self-Reported Delinquency Questionnaire. The purpose of the Charlebois et al. study was to find early indicators that could predict boys who were at risk for developing antisocial behaviors.

Alfonso and Santandreu (1999) employed a multiple-stage screening procedure in the identification of learning and behavior problems. Stage 1 was a conference day for teachers to operationally define the types of learning and behavior problems students experience. Stage 2, pre-screening of students, consisted of a teacher-generated list of students who may be experiencing learning and/or behavioral difficulties. During Stage 3, students' academic and emotional functioning were assessed using standardized measures. Stage 4 consisted of reporting results and making recommendations, particularly for students whose performance fell more that one standard deviation below the mean on either the academic or behavioral measures.

Reynolds (1986) described a multiple-stage procedure that was used to screen for depression among students. The procedure consisted of three stages: Stage1, an initial large group screening with self-report measures; Stage 2, a second screening with the same self-report measures for those youngsters who scored at or above a designated cut-off score at the first screening; and Stage 3, an individual clinical interview with children who scored at or above the cut-off score at

the second screening. Reynolds (1986) developed his multiple-stage screening technique to address the "generalized finding of overendorsement of depressive symptomatology in an initial assessment" (p. 119). When used in screening for depression among school children, the end result was a prevalence rate of 7 to 12% for the total sample, rather than the initial rate of 18 to 20%. Adopting Reynolds' procedure, Laurent et al. (1994) reported similar results using the multiple-stage procedure to identify anxiety among children; the initial rate was 18%, but the end rate was 4 to 6% of the original sample.

This brief review of multiple-stage screening studies reveals that different procedures have been used, depending on the goal of the particular study. Respondents, time frames, and techniques have varied across studies. Our study used a multiple-stage screening procedure similar to that employed by Reynolds (1986) and Laurent et al. (1994).

Method

Participants

Participants were 862 youngsters in Grades 9 - 12 from a rural school district in central Illinois.

Instruments

Mood and Anxiety Symptom Questionnaire (MASQ; Watson & Clark, 1991) is a 90-item measure developed to assess constructs associated with the tripartite model of anxiety and depression proposed by Clark and Watson (1991). Briefly, the tripartite model addresses negative affect (NA; general emotional distress), positive affect (PA; pleasant engagement with the environment), and physiological hyperarousal (PH; somatic arousal). According to the model, NA is common to both anxiety and depression, and explains the high rate of comorbidity

associated with these disorders. Low levels of PA characterize depression, and elevated levels of PH characterize anxiety.

The MASQ has scales that measure aspects of the tripartite model: General Distress: Anxiety (11 items), General Distress: Depression (12 items), General Distress: Mixed (15 items), Anxious Arousal (17 items), and Anhedonic Depression (22 items). The MASQ has demonstrated sound psychometric properties with college student and adult samples (Watson, Clark, et al., 1995; Watson, Weber, et al., 1995). In our study, we used the Anxious Arousal and Anhedonic Depression scales for the screenings at Stages 1 and 2. To our knowledge, this was the first time the MASQ has been used with an adolescent sample.

Diagnostic Interview for Children and Adolescents-IV (DICA-IV; Reich et al., 1997) is a computerized diagnostic interview based on the DSM-IV (American Psychiatric Association, 1994). Participants completed the adolescent version, which is used with individuals between the ages of 13 and 18. The computerized format allows students to complete the interview individually at their own pace. The DICA-IV is organized around 25 diagnostic areas in which an individual may be experiencing problems. Participants in our study were assessed in the following nine areas: Oppositional Defiant Disorder, Conduct Disorder, Major Depressive Disorder (past and present), Mania or Hypomania, Dysthymic Disorder, Separation Anxiety Disorder, Generalized Anxiety Disorder, Posttraumatic Stress Disorder, and Eating Disorders. Reich (2000; Reich et al., 1995) demonstrated good reliability and validity with the DICA-IV.

Procedure

This study was part of a school-wide screening for depression that was conducted as part of the school-based health clinic. The goal of the screening was to identify participants for adolescent treatment groups on depression.

Stage 1. Teachers were given a packet of MASQs with instructions on how to administer them to students in their homeroom. The means and standard deviations for the Anxious Arousal and Anhedonic Depression scales of MASQ were calculated.

Stage 2. Those students who met the cut-off score on the Anhedonic Depression scale were assessed a second time with the MASQ. This assessment occurred in the school auditorium. We attempted to have students complete the second administration of the MASQ within two weeks of the original administration.

We also tried to have students who missed the original administration of the MASQ in their homerooms complete the measure at this time. Those who completed their first MASQ at this time were assessed a second time, again, usually within a two-week period.

Stage 3. Those students who continued to obtain scores at or above the cut-off score on the Anhedonic Depression scale completed the computer-administered DICA-IV. The DICA-IV was scheduled as soon as possible after the second administration of the MASQ for students who continued to meet the criterion at Stage 2. Students completed the DICA-IV on a laptop computer located in the school-based health clinic office.

Students who received a depression diagnosis as a result of their responses to the DICA-IV were invited to participate in group counseling for depression.

Results

Stage 1

MASQs were completed by 85.5% of the school during the homeroom administration by the teachers. Because this was a screening activity that would lead to further assessment of those students who met criterion, teachers were instructed to have students put their names on the

MASQ. Unfortunately, teachers were not consistent in reinforcing this request, and 16.5% of the MASQs were returned without names.

All valid MASQs that were returned were used to compute the means and standard deviations for the Anhedonic Depression and Anxious Arousal scales. MASQs that clearly represented response biases (e.g., marking all 1's or all 5's) were excluded. The mean for the Anhedonic Depression scale was 60.66 and the standard deviation was 12.24. The mean for the Anxious Arousal scale was 29.27 and the standard deviation was 11.05.

Recognizing the high rate of co-occurrence between anxiety and depression, we established three groups using cut-offs based on scores from both the Anhedonic Depression and Anxious Arousal scales. The depressed group consisted of students who obtained a score one standard deviation above the mean on the Anhedonic Depression scale ($\geq$ 72.90) and no more than half a standard deviation above the mean on the Anxious Arousal scale ($\leq$ 34.81). The anxious group was composed of students who obtained a score one standard deviation above the mean on the Anxious Arousal scale ($\geq$ 40.32) and no more than half a standard deviation above the mean on the Anhedonic Depression scale ($\leq$ 66.78). The mixed depressed-anxious group consisted of students who scored one standard deviation above the mean on both scales (Anhedonic Depression $\geq$ 72.90 and Anxious Arousal $\geq$ 40.32).

Of the students screened at Stage 1, 12.4% scored in the depressed range (i.e., were in the depressed or mixed groups). Students who were in the depressed or mixed depressed- anxious groups continued to Stage 2.

Stage 2

Attrition at Stage 2 was 34.3%. In other words, 65.7% of those who passed through Stage 1 completed a second administration of the MASQ. Of these students, 60% no longer met the

criterion to be placed in the depressed or mixed group based on their score on the Anhedonic Depression scale. That meant that 4.1% of the total sample screened at Stage 1 continued to meet the criterion after the Stage 2 screening.

Stage 3

Of those who passed through Stage 2, 91.1% continued to Stage 3 and completed the computerized administration of the DICA-IV. Of the students who completed the DICA-IV, 26.8% received no DSM-IV diagnoses. The remaining students (73.2% completing Stage 3) did receive a depression diagnosis. This represented 3.5% of the original sample screened at Stage 1.

Discussion

Generally, our results were consisted with those reported by Reynolds (1986), although we found fewer students scoring in the depressed range at each stage of the screening process. Reynolds identified 18 – 20% at Stage 1, while we identified 12.4%. Reynolds reported 12 – 15% of the total sample continued to score in the depressed range at Stage 2; our results indicated that 4.1% of the total sample continued to score in the depressed range. At Stage 3, Reynolds reported that 7 – 12% of his total sample was identified as depressed based on a clinical interview. We found 3.5% of the total sample received a DSM-IV depression diagnosis based on the computer-administered DICA-IV, which is in line with reported prevalence rates (see Birmaher et al., 1996 for a review). The variations in the percentages at the different stages may represent differences in the samples and/or measures used in the respective studies. Both samples were from the Midwest, although separated by approximately 15 years. In this case, regional differences would appear to play less of a role than they might if the samples were from different parts of the country. It seems more likely that the differences may be due to the measures employed. The MASQ was developed based on the tripartite model of anxiety and

depression, which is particularly sensitive to the unique features of these disorders. The instruments that Reynolds employed would be viewed as measures of negative affect within the tripartite model, and therefore would not be specific to depression. The differences between studies may have resulted from the fact that we used "better" measures of depression. This is only a hypothesis until others replicate our findings using the same measures.

In addition to the findings from the different stages of the multiple-stage screening, we would like to share several practical, "lessons learned" from conducting this study. The first has to do with using teachers as data collectors. This has an intuitive appeal, because it means more data can be collected in a shorter period of time. Teachers hand out things to be completed in homeroom quite frequently, so we expected this to go smoothly. Although written instructions were provided with the MASQs, which included being sure students put their names on the measure, a number of teachers returned MASQs from their classes without names. This made it impossible to identify students who met the criterion for the second stage of screening. Our advise, consistent with Reynolds' (1986) recommendation, is to provide a brief in-service for teachers so that everyone is on the same page when it comes to doing the large, initial Stage 1 screening during homeroom.

A second issue to consider when conducting a multiple-stage screening project is the cut-off score used to identify students who will continue through the process. We used a score of 72.90 on the Anhedonic Depression scale, which represented one standard deviation above the mean for our sample. In practical terms, that meant a student had to have a score of 73 on the Anhedonic Depression scale to be identified. Although our approach of using one standard deviation above the mean is not unusual, it does mean that scores right next to the cut-off score are excluded. For example, there were 12 students whose score on the Anhedonic Depression

scale was 72. Are these students really different from those who scored 73 on the scale? Probably not. However, you have to establish some criterion or cut-off score. This criterion can be empirically based, as it was in our case, or resource based. For example, if there were limited resources, the cut-off score would be raised to identify fewer students.

Cut-off scores also influenced our study in another way. In our effort to be sensitive to the comorbidity of anxiety and depression, we used the scores from both the Anhedonic Depression and Anxious Arousal scales in identifying group membership. Group membership acted as the identifying variable for passage through a stage. By using the criteria we used, +1 standard deviation (SD) and less than +.5 SD to identify depressed and anxious students on the Anhedonic Depression and Anxious Arousal scales, respectively, and +1 SD on both scales for the mixed group, we created what we call "in-betweeners." These were students who fell between the criteria. For example, we had a student who had a score of 100 on the Anhedonic Depression scale (well over 72.90), but a score of 35 on the Anxious Arousal scale -- not $\leq$34.81 (i.e., +.5 SD). As a result, this student would not be identified as depressed. Also, this student would not fall into the mixed depressed-anxious group because the score of 35 on the Anxious Arousal scale is less than 40.32, the +1 SD needed to fall within this group on both MASQ scales. The situation created by our "in-betweeners" highlights the importance of thinking through implications of the selection criteria established.

A third issue had to do with what we refer to as the foibles of high school students. The attrition witnessed in Stage 2 of the screening process was explained in part by chronic absenteeism among some high school students. Repeated attempts were made to have students who passed through Stage 1 complete measures at Stage 2. Often, we were informed that these students were absent. Also, switching the second stage assessment to the auditorium, rather than

in the classroom, affected some students' willingness to participate. It is one thing to do something everyone is doing in your homeroom. It is another thing to have to leave class or study hall (i.e., be singled out) to do something in the auditorium in a mixed class setting (i.e., with students who may be older or younger than you).

A fourth issue had to do with the students who fell into the anxious group. Our focus was not on anxiety, so these students did not pass through Stage 1 unless they were in the mixed depressed-anxious group. This creates what we refer to as an ethical dilemma of identification. In other words, we identified students who may have been experiencing emotional distress, but did not directly act on this information. Luckily, in our situation, we were in a small, close knit school community, so students who experienced emotional distress were monitored through the mental health component of the school-based health clinic. However, whenever you "identify" students, whether it is in the realm of emotional or academic functioning, you should feel an ethical obligation to make their lives better. If you are going to conduct a multiple-stage screening that includes some control for comorbid conditions, you want to be sensitive to this issue.

A different twist on this ethical dilemma is considering referrals from the school itself. For example, if teachers know that you are screening for depression, they may suggest that particular students are depressed. These students may or may not meet the criteria that you are using in your screening procedure. If they do not meet the criteria, you still will want to pursue why particular teachers believe a student is depressed.

Another lesson learned during this project was the strengths and weaknesses of a computerized diagnostic interview. An obvious strength is that the computer provides a reliable and economical way to interview students. Also, students generally found the computer

interview a novel experience. They may have even been more open about their symptoms in this anonymous format. The diagnostic interview did have some disadvantages. For example, the program did not allow for "clinical judgment." This was most obvious when it came to the diagnosis of an eating disorder. There were a number of students who clearly were overweight, but received a diagnosis of an eating disorder, because they reported that they had lost a certain number of pounds. The algorithm that was programmed into the computer accepted this without question. This suggests the importance of reviewing student responses and confirming the computer-generated diagnoses, rather than blindly accepting them because they are on the computer printout.

Finally, it is important to be aware of the possibility of externalizing diagnoses, even when you are screening for internalizing disorders. It is common to see researchers in the area of internalizing disorders being sensitive to the comorbidity of other internalizing disorders (e.g., anxiety and depression) or researchers in the area of externalizing disorders being sensitive to the comorbidity of other externalizing disorders (e.g., attention deficit hyperactivity disorder and conduct disorder). However, it is less common, but just as important, to be sensitive to the possibility of comorbidity of internalizing and externalizing disorders. We found that a number of the students who received a DSM-IV depressive disorder diagnosis as a result of their responses on the DICA-IV also received an externalizing diagnosis (e.g., conduct disorder, oppositional defiant disorder). Without recognizing the possibility of comorbid internalizing and externalizing disorders, it may be difficult to really know if you have "pure" groups in your research or why your treatment, designed for depression, is not working as expected.

Given the many situations presented to students today, screening and early identification of potential difficulties are important. Screening for emotional difficulties is a secondary prevention

activity that clearly falls within the purview of school psychological services. In addition to potentially more accurate identification, multiple-stage screening is cost effective and takes relatively little time and effort. We highlighted some of the lessons we learned during our screening for depression in a high school setting. We hope that our experiences will be helpful to those of you considering using multiple-stage screening procedures in your settings.

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